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THE AUSTRALIAN NATURALIST

THE JOURNAL OF

The Naturalists' Society

of New South Wales.

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The Naturalists' Society

OF NEW SOUTH WALES

Council. 1960-1961

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Miss C. Salvia, Mr. A. Holmes.

Auditors: Mrs. L. Powell, Miss M. Christie.

Publication Committee:

The President, Hon. Editor, and Hon. Secretary.

NOTICES

Meetings of the Naturalists' Society are held on the first Tuesday of every month, except January, in the Salvation Army Headquarters Building, 140 Elizabeth Street (Clark Street entrance), at 7.30 p.m. Members are reminded that exhibits and notes of field observations are welcome, and also that visitors may be brought to meetings and outings.

The Journal may be obtained from the Hon. Secretary. Price 3s. Postage extra. The Journal is issued free to members.

Annual subscription: Adults 15/-; Juniors (under 18 years) 2/6; Country members 4/-.

Part 2

EXTRACTS FROM SECRETARY'S REPORT

Our numbers have increased slightly since the last report but we have lost some senior members through death. We miss Mrs. Zeck from the Council meetings she had attended for so many years, and Miss Petersen and Miss Ross from Tuesday night meetings and excursions for they too had been interested members for many years.

Last year four Honorary Life Memberships were granted to Miss D. Dobbin, Miss N. Luckie, Mrs. R. J. Watson, and Mr. E. H. Zeck in recognition of many years of service to the Society.

The usual monthly meetings have been well attended. Unfortunately owing to so much building fewer areas are left for excursions, and we are constantly seeking areas within easy reach of all members. We have had our yearly plantings at Ball's Head and at the A. E. Watson Memorial Park.

Our sincere thanks are due to the Salvation Army for their continued permission to use the Young People's Hall for our meetings; to the Lecturers who have given such interesting and instructive talks often illustrated with beautiful slides; to Mr. Cotterill who has so kindly bound volumes of the Naturalists' Journal for us; to Mr. Nathan for his interested work as Librarian; to Mrs. Powell and Miss Christie our Auditors; and to the Editors of our Journal.

LIST OF SPEAKERS

Mr. G. Whitley, Down Yonder in New Orleans, with slides.

Mrs. A. Croucher, Trip to West Australia, with slides.

Dr. Koch. Botanical Observations of a Geologist in Persia with slides.

Mr. Freeman. Biology and Social Behaviour of Bull Ants, with slides by Mr. Trengrove.

Mr. A. Holmes, Beetles and Bugs, with slides

Dr. D. Anderson. Fruit Flies.

Mr. R. Carolin. Flora of South England, with slides.

Mr. A. Colefax. Australian Frogs.

Miss I. Bennett. Trip to Macquarie Island, with slides.

Miss D. Dobbin. Trip to U.S.A., California, and Alaska, with slides.

Dr. Giovenelli. The Sun, with slides.

Miss M. Tindale. Australian Ferns, with slides.

Mr. A. Holmes. Trip to Central Australia, with slides.

Dr. G. K. Berrie. Notes on Natural History of Nigeria, with slides.

Miss E. Nicholls. A visit to Cradle Mountain and Elsewhere in Tasmania, with slides.

Dr. W. R. Browne. Kosciusko Region, with slides.

A. E. WATSON MEMORIAL PARK

Two years ago, through the courtesy of Rockdale Council, this Society secured threequarters of an acre of land in the appropriately named Monomeeth Street, (Aboriginal for Beauty), Bexley for development as a Native Park in memory of a beloved Naturalist, Mr. A. E. Watson. The initial planting was attended by members of Rockdale Council, and the Deputy Mayor, Mr. McCarthy, planted the first tree. This ceremony was televised. Since that time, we have had a further three plantings including Wattle day, this being very appropriate as Mr. Watson loved wattles and was a foundation member of the Wattle League now incorporated with the Naturalists' Society.

BALL'S HEAD

By L. POWELL

Ball's Head is a peninsula on the northern side of Sydney Harbour. It was named after Lieut. Henry Lidgbird Ball, an officer of the First Fleet, who about 1788, landed there with a party and walked through to Pittwater.

The bush on Ball's Head gradually disappeared from bushfires and firewood gatherers until it was almost a bald Head, with only a few trees, blackberry and lantana remaining. In June 1926, 14½ acres were dedicated as a public reserve under the leadership of the then Premier, J. T. Lang, and in May, 1935, an additional 8¾ acres was added by the Stevens Government.

Meanwhile in 1931, the task of replanting it was undertaken by the North Sydney Council, the Naturalists' Society and other Societies. Their work was greatly aided by Mr. W. W. Froggatt, in memory of whose help a Memorial Lookout was unveiled in 1933. Since then regular Arbour and Tree planting days have been held and many thousands of trees planted. Last year over 60 native trees grown by our Hon. Secretary, Mrs. Croucher were planted and this year 30 more, also grown by her, were planted in June in conjunction with the North Sydney Council. A short ceremony took place at the Froggatt Memorial Lookout at which short speeches were made by the Mayor Mr. Bugle and other aldermen and our President, Miss K. English. Most of the trees have grown exceedingly well, the situation and soil evidently suiting them.

Only native trees are planted and should a tree die the Municipal Council has made a practice of replacing it. Many species of tree and shrub native to our coastline may be found flourishing there—a sight heartening to those who have given time to replanting the reserve. Such annual tree planting ceremonies will help to keep Ball's Head the most outstanding reserve round Sydney Harbour.

WILLUNGA RESERVE, WHITFIELD PARADE, HURSTVILLE GROVE

A group of people anxious to preserve as much of our bushland as possible approached Kogarah Council through your Secretary to save an area of several acres in Whitfield Parade, Hurstville Grove. We visited this region several times and listed over eighty varieties of fine native flora. In addition there is a series of four caves, one of which contains an aboriginal kitchen midden. There is also a tiny stream, much overgrown with weeds, but this will be cleared and restocked with native plants.

Kogarah Council generously allowed the group which formed the St. George Native Garden Club in order to administer the site, an area of just over three acres to be improved, and developed as a native garden with the name, Willunga Reserve (aboriginal for "Location of Green trees"). There is much work to be done in clearing lantana etc., but a very enthusiastic band of workers is organized to deal with this matter and we hope to have a tree planting in October.

We would like to thank both Rockdale and Kogarah Councils for their generosity in making these areas available to Nature conservationists and feel sure that their foresight will be remembered with gratitude, not only by those whose pleasure it is now to restore these reserves, but also, by future generations, who will benefit by the beauty thus planned.

LIBRARY NOTES

Library donors include Miss D. Dobbin and Miss N. Luckie who have donated an almost complete set of "Wild Life." This comprises eighteen volumes and No. 1 of Vol. 19—the last "Wild Life" to be issued. If someone could supply Vol. 2, No. 4; Vol. 6, No. 12; and Vol. 7, No. 1, we would have a complete set.

Miss Dobbin also presented the Library with a complete set of The Naturalists' Journal since its inception.

Other gifts have come from Miss Boulter, Mrs. Croucher, Mrs. Robin Miller of Glenbrook, Miss English, and Messrs. G. P. Whitley, A. Holmes and C. V. Nathan.

We also acknowledge exchanges and magazines from many Societies.

Starting in this issue we are publishing lists of some books belonging to the Society's Library, this present list being on Botany.

BAILEY, F. M.	Ferns of Queensland, 1892.
BAILEY, F. M.	Queensland Flora (Parts 1-6), 1899-1905.
BAILEY, F. M.	Weeds and Poison Plants of Queensland. 1906.
BAILEY, J. M.	Catalogue of Queensland Plants. 1909.
BAILEY, J. M.	Companion for Queensland student of Plant Life, 1897, 2 copies.
BAKER, R. T.	Cabinet Timber of Australia. 1913
BAKER, R. T. & SMITH	Eucalyptus and Essential Oil: Vols. I-IV, 1863-1869 and Vol. VI, 1873.

BENTHAM, G.	Flora Australiensis.
BLAKELY, W. F.	A Key to Eucalyptus. 1934
BOND, R. W.	Victorian Ferns. 1934.
CHEEL, E. & F. R. MORRISON	Cultivation of the Australian Nut. 1935.
COMPTON, R. H.	South African Flowers (no date)
COOKE,	Australian Fungi
DARWIN, C.	Fertilisation of Orchids. 1890.
DARWIN, C.	Insectivorous Plants. 1875.
EVANS, E.	Botany for Beginners.
FITZGERALD, R. D.	Australian Orchids (Parts I & II)
FOX, T.	How to Find and Name Wild Flowers. 1916.
HAMILTON, A. G.	Bush Rambles: 1937.
HAYWOOD, W. R.	The Botanist's Pocket Book, 1892.
HOOKER, SIR J. D.	A Student's Flora of the British Isles: 1884.
JACKSON, B. D.	A Glossary of Botanic Terms. 1905.
JACKSON, H. D.	New Zealand Berries.
JACKSON, H. D.	New Zealand Ferns.
JACKSON, H. D.	New Zealand Flowers.
KALESKI, R.	A Record of Forestry in New South Wales.
KERNER, A. & OLIVER	Natural History of Plants. Vols. I & II. 1902.
LOWSON, J. M.	A Text Book of Botany. 1908.
LINDLEY, J.	Natural System of Botany. 2nd edition.
LYELL, K.	Geographical Handbook of Ferns. 1870.
MAIDEN, J. H.	The Guide to Botanic Gardens. 1903.
MAIDEN, J. H.	A Critical Revision of Eucalypts.
MAIDEN, J. H.	Manual of New South Wales Grasses
MUELLER, F. BARON VON	Key to System of Victorian Plants, 1885
MUELLER, F. BARON VON	Select Extra-tropical Plants, 2 copies, 1888 and 1891.
OLIVER, F. W.	Makers of British Botany, 1913.
PARSONS & BUCK	Wild Flowers of California, U.S.A., 1904.
PENFOLD, A. R. & F. R. MORRISON	Australian Tea Trees of Economic Value.
PRATT, A.	Ferns of Great Britain (undated)
RODWAY, L.	The Tasmanian Flora. 1903.
RODWAY, L.	Tasmanian Myrtaceae. 1907.
RUPP, H. M. R.	Australian Orchids. 1943.
SULMAN, F.	Some Familiar Wild Flowers. Vol I.
THORNTON, G.	Wild Flowers
TURNER, F.	Australian Grasses. Vol. I, 1895.
WALL, A. & L. M. CRANWELL	Botany of Auckland, N.Z., 1936.
WOOLLS, W.	Plants of Sydney, New South Wales: 1891.
WOOLLS, W.	Plants of New South Wales: 1885.

NOTES ON THE DISTRIBUTION OF EPIPHYTIC ORCHIDS IN THE BLUE MOUNTAINS OF NEW SOUTH WALES

By ISOBEL BOWDEN

The following notes comprise data available to the writer and should not be regarded as final. However as many keen collectors have covered the area it is doubtful if many more species will be recorded.

Of 144 species of orchid recorded from the area seventeen are epiphytic. They are distributed among the various genera as follows:—Liparis 1, Dendrobium 7, Bulbophyllum 3, Cymbidium 1, Sarcanthus 1, Sarcochilus 4.

As would be expected there are few variations in species from those listed from Illawarra by L. Cady (Aust. Nat. XII.1), and it is possible that further search may show that the exceptions also occur in the two areas.

Where available I have included early records of collectors from Orchids of New South Wales by Rupp. Where no collector's name is given the notes are from the writer's experience.

1. *Liparis reflexa* (R. Br.) Lindley. Burragorang, Cambage-8. 1905. The Valley, Fletcher-4. 1888. This species is widespread throughout the whole district on sheltered and semi-exposed rock ledges. It has been recorded from Woodford, Glenbrook, Springwood, Katoomba, Kedumba and Mount Irvine. Some fine plants in Woodford were found to have a branching inflorescence. Though the flowers are small the light green foliage is distinctive in its natural environment. It flowers in Autumn—February to May.

2. *Dendrobium speciosum* Sm. This species is included in A. A. Hamilton's list of the flora of Mount Wilson. The distribution is similar to Liparis, but it prefers more open sunny situations. The plants in this area are all confined to rocks where the roots penetrate the sandstone cracks thus obtaining moisture. It has been noted at Glenbrook, Springwood, Woodford, Kedumba Pass, Mount York and Mount Irvine. Flowers, September and October.

3. *Dendrobium aemulum.* R. Br. Recorded by Hamilton for Mount Wilson, Woodford, 9.1947. Hazelbrook in cultivation, James and Campbell. Plants are found scattered throughout the whole area in deep gullies and brush pockets. This orchid prefers living trees and does not usually survive long if the host tree is killed. However one or two fine plants have been found growing on moss-covered rocks where some compost has collected.

4. *Dendrobium teretifolium.* The local form is usually *var. Fairfaxii.* Thickening of the leaves is given as a characteristic of the type form by Rupp. In my experience this thickening occurs in most species of Dendrobium in more exposed situations, whereas in deep sheltered valleys the habit is more slender and attenuated.

Hamilton lists this species for Mount Wilson where it is still to be found in dense masses of the basalt areas. It has been recorded also from Bowen Creek, Bedford Creek, Victoria Falls, Leura, Lawson and Woodford. It does not appear to go below the natural dividing line at Linden-Woodford. No record is known from the

Glenbrook Creek basin. It prefers tall tree tops in sheltered gullies, but has been observed by the writer growing on moss-covered perpendicular rock. Flowers August to October.

5. *Dedrobium striolatum* Reichb. f. Recorded by Hamilton for Mount Wilson. Mount Victoria, Maiden-1897. Katoomba, Walford-10. 1922. Hazelbrook, Schleicher 10. 1931. Glenbrook, Rupp-10, 1916 Woodford, 9. 1947, also Faulconbridge, Lockyer's Road, Mount York, Blackheath and others.

This pretty little dendrobe is probably the most widespread and prolific in the area. In sheltered situations it hangs in masses on the rocks. The writer has observed that the leaves of this species tend to become thickened in more exposed situations. Flowers, September to November.

6.*Dendrobium pugioniforme*. Cunn. This distinctive little dendrobium grows in masses on the northern basalt caps, and is recorded by Hamilton for Mount Wilson, but it appears to be absent from most areas on the main watershed. The writer has recorded it from a creek bed above the Grose Gorge at Faulconbridge, where it was growing on rock. Here again the leaves were more robust than in the brush areas. Flowers October to November.

7. *Dendrobium linguiforme* Sw. Glenbrook is given by Rupp as the only local record. The writer has recorded it in one place at Woodford on a spur of Glenbrook Creek. In spite of the fact that it occurs in the Armidale district at a height of 4,000 feet no record has been found above the Glenbrook system of valleys where it occurs in thick masses. Flowers, September and October.

8. *Dendrobium cucumerinum*. Macleay. The records of this species are from the outlying area of the Burragorang Valley. There is no record from the Blue Mountains proper. Burragorang, Scammell-1926, Messmer-1931, and Dockrill from the same locality. Flowers Summer and Autumn.

9. *Bulbophyllum crassulifolium* A. Cunn. (apud Lindl.) Rupp. Springwood, Jacobs-11. 1935. All subsequent records are from the same area, where it grows in masses on both rocks and tree trunks often in association with B. exiguum. Flowers Spring.

10. *Bulbophyllum elisae* (F. Muell) Benth. Lawson, Bowden-10, 1945. Mount Irvine, Woodford and Hazelbrook. This species is usually seen in the same locality as D. teretifolium on tall trees in sheltered gullies; at Mount Irvine however the writer observed very robust plants growing on a rock ledge on the sandstone area near Bowen Creek. It has not been recorded from the Glenbrook Creek area.

11. *Bulbophyllum exiguum*. F. Muell. Springwood, Betche-10 1896. Mount Irvine, Coll. ?, Woodford-3, 1948, and many other areas. This dainty species appears to be the most widely distributed of the genus in this locality where it is found creeping extensively on rocks and tree trunks. Flowers, February to May.

12. *Cymbidium suave*. R. Br. Rupp gives Springwood and Mount Irvine but does not name collectors. The writer has observed it scattered throughout the whole area, and reaching its best growth in the Glenbrook Creek area where it forms dense clumps in old Turpentines and Angophoras. This orchid appears to be most tolerant as to situation and host trees, and has been seen by the writer growing on many Eucalypts, E. Eximia, E. Seiberi, E. deanii, Angophora, Acmena, Backhousia, Coachwood, Banksia, and Casuarina. Thousands of seeds are contained in the large capsules, and it would appear that they will grow where damaged or rotting tissue is found. Roots that penetrated at least fifteen feet into the hollow

trunk, have been noted in a huge damaged Turpentine. Flowers late Spring and Summer.

13. Sarcanthus tridentatus (Lindl.) Rupp. Recorded by Rupp from Mount Irvine. This species is scattered through the whole area, sometimes forming masses on light branches above moist water-courses. Though the flowers are small and inconspicuous they have a delightful perfume. Flowers October and November.

14. Sarcochilus falcatus R Br. Recorded by Hamilton for Mount Wilson where it has now become acclimatised on exotic trees along the road. The writer has recorded it from Mount Irvine, Bedford Creek, Leura, Katoomba and Lawson. Though scattered through sheltered brush pockets it has not been recorded from the Glenbrook Creek area. Flowers, October to December

15. Sarcochilus australis (Lindl.) Reichb. f. This little orchid is usually found in similar situations to Sarcanthus, and has been recorded by the writer from Mount Irvine, Bowen Creek, Woodford, Lawson and Hazelbrook Creek, but it has not been recorded from the Glenbrook Creek area where Sarcanthus is common.

16. Sarcochilus olivaceous. Lindl. Woodford, Bowden-10. 1948. Flowered also 10. 1949. This is the only record and concentrated search of similar localities in the Glenbrook Creek basin has failed to locate further specimens. Flowers Spring.

17 Sarcochilus Lillii (F. Muell). F. Muell Woodford-10, 1945, 11, 1947, also Springwood, Valley Heights and Glenbrook, Glenbrook Creek tributaries and Lapstone Gorge. This species is particularly partial to Backhousia trees upon the trunks of which it sometimes forms large colonies, the plants extending along the smaller branches and twigs. Good plants have been observed growing on rocks, and in Glenbrook area the writer found a rock covered by the roots of a Port Jackson fig and the perpendicular face was literally covered with this delicate pink-flowered little gem.

The most interesting feature in the distribution of local epiphytes appears to be the line of demarcation which occurs along the Linden-Woodford ridge about half way up the Blue Mountains. This ridge passes South and East through Woodford, and forms the water-shed between the Bedford and Glenbrook Creek streams.

There seems no climatic reason for example why two species of Sarcochilus should exist on one side of the ridge on *similar levels* with two on the other side. Other instances of this apparent separation will be noted in the above descriptions and while time may show some variation the two areas seem very clearly defined.

SOME NOTES ON THE GEOLOGY OF THE SYDNEY REGION AND ITS EFFECT ON THE SOIL VEGETATION

By DORA REIACH

As Field Naturalists wander about the Sydney region they are confronted by two distinct types of land-form . . .

1. The steep sandstone gorges of the Blue Mountains and Cowan Creek area, and the coastal beaches and headlands.
2. The gently undulating surface of the Sydney plain.

The first type of rock weathers to a poor, shallow, sandy soil that supports a typical xerophitic heath vegetation. Where the soil accumulates in the gullies a richer vegetation with tall trees, tree ferns and vines is found as in National Park. The second type found between Sydney and Penrith, is a shale rock that weathers to a heavy clay soil that supported, before it was so ruthlessly cleared, an open Eucalypt forest.

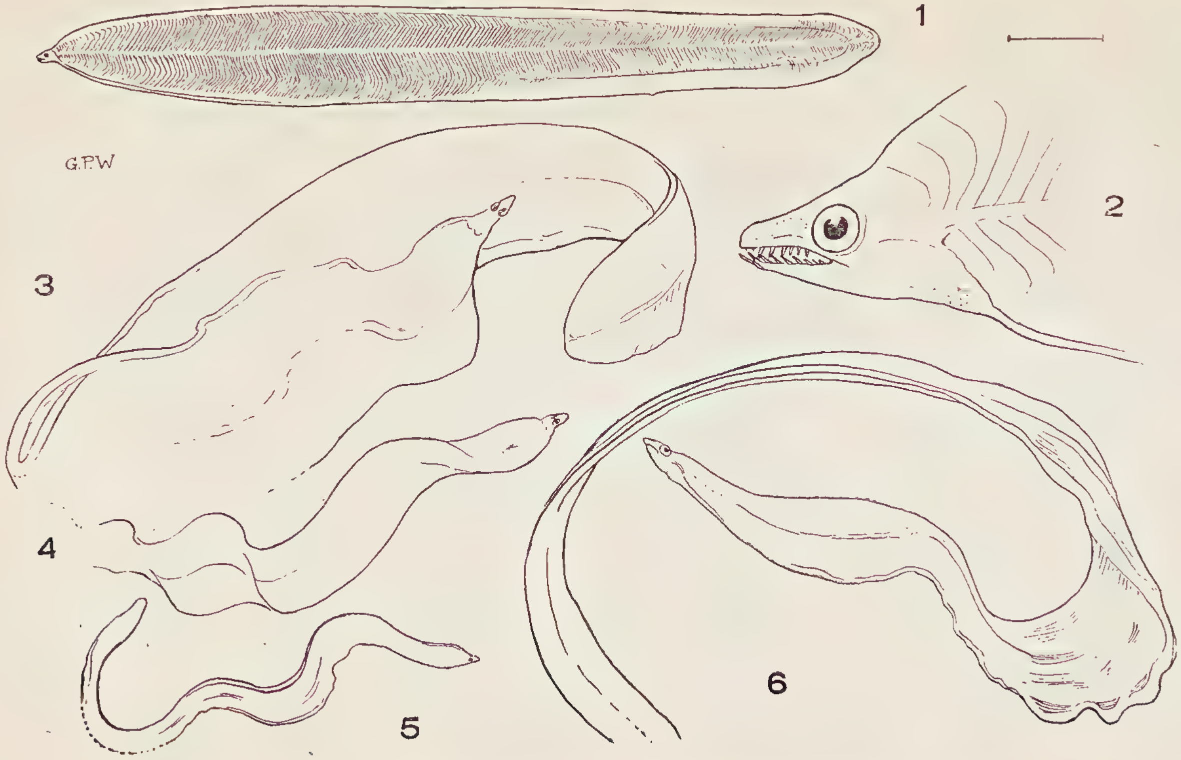
The distribution of these two main types of rock and their different types of vegetation, is due to the fact that the Triassic beds that make up the rocks of the Sydney region are composed of three great series of rocks many hundreds of feet deep, the lowest, the Narrabeen Beds, the middle, the Hawkesbury Sandstone and the uppermost, the Wianamatta Shales. The whole Triassic series round Sydney has been folded up; in the west to the Blue Mountains about 3000 feet in height, in the north to the Hornsby Heights, almost 900 feet and to the south to the Engadine Heights about 500 feet. Even along the coast, the land has been uplifted 200 to 300 feet, thus producing the bold cliffs of North Head, Ben Buckler, etc.

The effect of the weather, creeks and sea on these rocks has produced the shape of the land as we know it. The uplift has exposed the Narrabeen strata only along the coastal cliffs north from Long Reef and south to Helensburgh. They consist of beds of fine sandstone and shales that weather to a fertile soil supporting a rich and varied vegetation.

The Hawkesbury Beds are the middle of the Triassic Series and as they consist of a coarse sandstone with thin beds of shale, they resist the weather and stand out as cliffs against the sea, and as steep gullies when eroded by rivers and creeks, as Calna Creek, Berowra Creek, etc.

The Wianamatta Beds that form the topmost strata of the series, consist mainly of shales that are easily weathered and washed away, so that much of this shale has been worn off the higher land on the Blue Mountains, but remains as a covering on the Sydney Plain. Economically it is useful for making bricks.

About the same time as the folding took place during the tertiary period, some million years ago, the whole of the east coast of New South Wales was covered with great flows of basalt from many lively volcanoes. This volcanic period has cooled completely and much of the basalt has been eroded away, but occasional patches can still be found at Mt. Wilson, Mt. Irvine, Mt. Tomah and at Prospect, where it is mined as blue metal for roads. It weathers to a very rich soil and produces a very rich vegetation. This is well demonstrated at Mt. Wilson where the change from sandstone flora to basalt flora is clearly marked.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A LARVAL EEL FROM SYDNEY

By GILBERT P. WHITLEY

(Contribution from The Australian Museum, Sydney)
Figures 1—6

The leptocephalus, "glass eel" or larval stage of eels is a curious fish, ribbon-shaped, transparent, with a tiny head, large eyes and needle teeth. Many kinds of leptocephali have been described and figured but only a few of them have been identified with the adult eels and other fishes into which they change. Probably the best known are the classic "glass eel" of the Freshwater Eel and that of the Conger. Numbers of unidentified larval eels have been found in Australasian seas and a most unusual one was netted in a haul of planktonic animals at Circular Quay, Sydney, on 13th May, 1960; this larva and the jellyfishes and other creatures with it were evidently from the Tasman Sea and may have come down from tropical waters. The leptocephalus was a beautiful object in an aquarium as it slowly and gracefully swam with undulating motions, rather like the jellyfish known as Venus's Girdle. I classify this eel larva as *Leptocephalus ceramensis* Bleeker (1865, Atlas Ichthyol. 4: 122, pl. 193, fig. 3), a species hitherto known only from the type which came from Wahai, Ceram, Indonesia; so this species (the adult of which is so far unknown) can now be added to the New South Wales and Australian lists. The species is distinguished from other leptocephali by its large size, sudden increase in depth just behind head, and numerous myomeres (W-shaped muscle-bands). There are slight differences in proportions between my specimen and Bleeker's illustration, notably as regards the head which goes 50 times in the total length in the Sydney fish and about 32 in the Indonesian type, in which the myomeres number about 195 instead of about 265.

The specimen shrank somewhat in preservative so that its dimensions and diagnostic characters are now as follows. Total length, 225 mm. (nearly 9 inches); standard length, 217; depth, 25; head, 4.5; eye, 1.3; snout 2. The eye is normal, not upstanding or telescopic. The profiles rise steeply behind the minute head. There are about 265 myomeres, approximately 165 of them preanal and 100 postanal: these are very high numbers for a leptocephalus larva. The tail is paddle-shaped, with bluntly rounded tip. The intestine is straight, not festooned, and ends 165 mm. from tip of snout. There are no pectoral fins. I am unable to distinguish rays in the other fins, or renal blood-vessels.

The colour is transparent milky white, with faint opalescence. Eyes golden above. A few very minute, dark dots on head, gut, and to a less extent on body, but there are no conspicuous black spots as in many leptocephali. Australian Museum registered no. IB 4595.

Further specimens would be welcome.

EXPLANATION OF FIGURES.

No. 1 Side view, half the size, of the larval eel, *Leptocephalus ceramensis* Bleeker, from Sydney.

No. 2 Head of same, magnified five times.

Nos. 3 to 6. Attitudes, from various aspects, of living specimen in a small aquarium; sketched from kodachromes kindly taken by Mr. L. Thomas.

G. P. WHITLEY, del.

FLORA OBSERVED AT WARRIMOO 17.9.1960

By C. V. NATHAN

Fl.—Flowers

COMPOSITAE. Helichrysum elatum. Fl.
CUNONIACEAE. Callicoma serratifolia. Ceratopetalum gummiferum.
CYPERACEAE. Caustis flexuosa
DILLENIACEAE. Hibbertia Sp. Fl.
DROSERACEAE. Drosera spathulata
EPACRIDACEAE. Leucopogon lanceolatus. Fl. Epacris longiflora. Woollsia pungens. Fl. Sprengelia incarnata. Dracophyllum secundum.
GRAMINE. Themeda australis (Kangaroo Grass) Fl.
IRIDACEAE. Patersonia glabrata. (Blue Fl.), P. sericea. (Violet Fl.)
LILIACEAE. Smilax glyciphylla. Dianella coerulea. Xanthorrhoea. hastilis. Fl.
MIMOSACEAE. Acacia discolor. A. linearis. A. myrtifolia.
MYRTACEAE. Baeckea ramossima (Pink Fl.) Leptospermum flavescens. Angophera costata. Eucalyptus eximia. E. gummifera. E. notabilis (Blue Mt. Mahogany). E. piperita. E. sparsifolia.
PAPILIONACEAE. Gompholobium latifolium. Fl. Gompholobium Sp. Fl. Daviesia corymbosa. Fl. Dariesia sp. Fl. Pultenea stricta. Fl. Dillwynia ericifolia. Bossiaea microphylla Fl. Bossiaea sp. Fl. Mirbelia speciosa Fl.
PITTOSPORACEAE. Billardiera scandens.
POLYGALACEAE. Comesperma defoliatum. Fl.
PROTEACEAE: Isopogon anemonifolius Fl. Conospermum longifolium. Persoonia salicina. Xylomelum pyriforme. Lambertia formosa. Grevillea buxifolia Fl. Grevillea mucronulata Fl. Hakea dactyloides Fl. Lomatia silaifolia. Banksia serrata. B. spinulosa. Telopea speciossima Fl.
RHAMNACEAE. Pomaderris ligustrina. Fl.
RUTACEAE. Boronia floribunda. Fl. Eriostemon sp. Zieria. Fl.
SAPINDACEAE. Dodonaea triquetra (Fruits).
SANTALACEAE. Omphacomeria acerba. var. psilotoides. Fl.
THYMELACEAE. Pimelea linifolia. Fl.
UMBELLIFERAE. Hydrocotyle. Platysace. Xanthosia pillosa. Fl. Actinotus helianthi. Fl.
FERNS: Culcita dubia (False bracken). Pteridium esculentum (Bracken), Cyathea sp. (Tree fern). Asplenium flabellifolium. Blechnum sp. Gleichenia circinata (Coral Fern).

RARE FAUNA PROTECTION

Section 20 of the Fauna Protection Act provides that any protected fauna may from time to time be proclaimed as "Rare Fauna."

If any person takes or kills or attempts to take or kill any proclaimed Rare Fauna he is guilty of an offence which carries a penalty not exceeding fifty pounds or to imprisonment for a term not exceeding six months, or to both such penalty and imprisonment.

The Fauna Protection Panel considers that any animal proclaimed Rare Fauna reqquires special efforts for its conservation and in consequence has selected the birds and mammals listed below.

BIRDS

Red-crowned Pigeon (*Ptilinopus regina*)
Plains Wanderer (*Pedionomus torquatus*)
Gould Petrel (*Pterodroma leucoptera*)
Turquoise Parrot (*Neophema pulchellus*)
Bourke Parrot (*Neophema Bourkii*)
Elegant Parrot (*Neophema elegans*)
Scarlet-chested Parrot (*Neophema splendida*)
Blue-winged Parrot (*Neophema chrysostoma*)
Orange-bellied Parrot (*Neophema chrysogaster*)
Jabiru (*Xenorhynchus Asiaticus*)
Topknot Pigeon (*Lopholaimus antarcticus*)
Wonga Pigeon (*Leucosarcia melanoleuca*)
Australian Dotterel (*Peltohyas Australis*)
Painted Snipe (*Rostratula Benghalensis*)
Pied Goose (*Anseranas semipalmata*)
Plum- headed Finch (*Aidemosyne modesta*)
Squatter Pigeon (*Phaps scripta*)
Brolga (*Grus rubicundus*)
Spotted Bower-bird (*Chlamydera maculata*)
Paradise Rifle-bird (*Ptiloris paradiseus*)
Harlequin (Flock) Pigeon (*Phaps histrionica*)
Superb Lyrebird (*Menura superbaa*)
Prince Albert Lyrebird (*Menura Alberti*)
Lowan or Mallee Fowl (*Leipoa ocellata*)
Brush Turkey (*Alectura Lathami*)
Bustard or Plain Turkey (*Eupodotis Australis*)
Wompoo Pigeon (*Megatoprepia magnifica*)
Purple-crowned Pigeon(*Ptilinopus regina*)
White-headed Pigeon (*Columba Horfolciensis*)
Swamp Parrot (*Pezaporus Wallicus*)
Paradise Parrot (*Prephotus pulcherrimus*)

MAMMALS

Marsupials:

Native Cat (*Dasyurus quoll*)
Yellow-bellied Glider (*Petaurus australis*)
Long-nosed Rat-kangaroo (*Potorous tridactylus*,
Rufous Rat-kangaroo (*Aepyprymnus rufescens*)
Bridled Nail-tail Wallaby (*Onychogales fraenata*)
Brush-tailed Rock-wallaby (*Petrogale penicillata*)
Yellow-footed Rock-wallaby (*Petrogale xanthopus*;
Parma Wallaby (*Protemnodon Parma*)
Black-striped Wallaby (*Protemnodon dorsalis*)
Pigmy Marsupial Mouse (*Antechinus maculatus*)
Southern Planigale (*Planigale tenuirostris*)
Eastern Jerboa-marsupial (*Antechinomys laniger*)
Short-nosed Bandicoot (*Isoodon obesulus*)
Pigmy Possum (*Cercaertus nanus*)
Koala (*Phascolarctus cinereus*)
Whiptail or Pretty-face Wallaby (*Protemnodon parryi*)

Monotremes.

Platypus (*Ornithorhynchus anatinus*)
Spiny Ant-Eater (*Tachyglossus aculeatus*)

COLLECTOR OR OBSERVER?

By A. HOLMES

In a lifetime which is becoming uncomfortably short, most of which has been devoted to dithering about in the affairs of plants and animals, the query above has often been silently debated when a particularly interesting fact has emerged out of the blue. Other than its mere emphasis that man is fundamentally one of the greatest and most efficient predators, is there more scientific and economic value in the straightout pursuit, collection, killing and labelling of biology specimens than in the contemplation of their lives and habits?

With most of you I have spent countless hours reading the epics recorded by Fabre, Maeterlinck, Beebe, Rayment, Wheeler, Lorenz, Malcolm Smith—the whole illustrious procession of bug-hunters, and the fascination of their stories has not been the fact that a specimen had been collected on the north bank of the Orinoco River, "length 366 (346 plus 20) mm. *Rasus rattus*. Smith and Jones, 1854. Proc Zoo. M.Z. 116325", and so on in endless lists. As students and systematic workers these figures were very necessary for future reference, but they were confined to critical paper published for a specialised field. The story that you and I enjoyed so much was of the place in which the specimens lived, the plants that grew in its habitat, what it was doing as they stalked it with malice aforethought ,and what all the other animals did or said about the matter. Under the vivid wordings of their narratives I seemed to detect a small note of regret that the anticlimax was a specimen label in some museum pigeonhole which would be visited, and briefly studied, by some students in equidistant generations.

My opinion, based on my own small work in the fields of collection, laboratory, museum classification, and field observation, is that the collector, pure and unadulterated, of living creatures is doing nothing very much except expressing his wish for a complete domination over something or other, however small. Let me hasten to add that my comment applies only to the bloke who surges around collecting bugs, beetles, birds and reptiles of species already well known and represented in plenty of material in the jars of laboratories and public collections. He has simply sacrificed another little life so that he may challenge a colleague of similar temperament, who will at once depart to carry on the deadly slaughter to bring his collection up to par. If either or both, could add just one *new* note on the habits and habitat of the beast before despatch they would be at least a little different from the "prime predator" who kills for the sake of doing so.

Yes, whatever service he may have been in the past, I feel that the day of the private collector is over, and the more difficult but intensely interesting, era of the behaviorist is in the ascendant. If you must make a collection, the aids of modern miniature colour photography offer a more permanent record of specimens and the added interest of collecting them alive to photograph in micro-habitats that you can arrange on your kitchen table.

Behaviour study certainly doesn't mean expensive expeditions to other lands, or even to the next street in your district for a contribution to the knowledge of this world of little lives. Admittedly you can't study the domestic doings of the wombat, dingo and brushtailed possum in many of our suburban backyards, but plant a few native shrubs and trees—or if it is very small, a single specimen of the bottlebrushes (Callistemon) melaleuca, or leptospermum—in that yard and sit near it in the flowering days of Spring and Summer. Your interest will get plenty of exercise in noting and recording the patterns of behaviour that become apparent after the same insects have been watched over a period.

In the oases created by this minimum of effort you will have a stack of valuable information available. Don't "collect" or "see" it; make it an "observe" session. If you can intimately offer some logical explanation for such patterns you have added a bit to the bank of knowledge, but even failing this, your recorded notes may offer a valuable clue to those students who will come later.

A flat? A room? A balcony? Crippled? Confined or are you just in the same aged group as myself? What's it matter! You have only to ask some friend to get you a terracotta saucer, some mud and a sheet of moss lifted from the wet rock slopes in the bush, and you have something of interest to watch. That "deadly" redbacked spider which was designed specifically centuries ago to provide good, if inaccurate copy for popular press stories can be kept and safely bred in thousands beside a bed, and give you some fascinating hours just watching the lady build her egg, sac, dash out and capture a beetle or fly, or just watch the young *Latrodectus* emerge. You need nothing more elaborate than a small flower pot with wet sand and a dry twig from your privet hedge standing up in it. Stand this in a dish of water whose diameter exceeds the vertical drop from any part of the twig. You can make the twig fit the dish. Get that same friend to bring a redback, with an egg sac if possible, and place her on the twig. From then on she is a complete but active prisoner. The redback loves dry habitats, and if she, or her progeny, drop on a thread of web down on to the surface of the water, they will hastily scuttle up again.

Have you ever noticed how those common little leaf-cutting bees (Megachile) start to cut an almost perfect disc out of the edges of your rose leaves? They are doing it every day during the summer. And if you follow them you will probably see the lady dash into a small hole in the mortar between the bricks of your house, or maybe an old nailhole in a fencepost. In here she will use the little circular pieces of leaf to separate the cells in which she will lay her eggs. And have you seen the parasitic bee—Crosica—waiting at the entrance of an Anthophora bee nest hole for the lady to emerge, so that she can dash in and lay her egg on the pollen ball? No? It's happening every day in almost every garden in Sydney.

You have many times seen those little lizards in your garden drop their tails in terror when attacked. Have you ever taken one and kept it (flies, mealworms, small pieces of cake, mincemeat)) to note how long it takes to renew its tail to complete length again. Is it shorter, or longer in the re-tread? I don't know; and I don't think it's been recorded. You could easily do that in a small cage in a small room which gets even a small amount of sun during the day. Does it always drop the same amount of tail or is this a variable factor? If so, how much is the variation? The answer might seem not worth the noting at the moment, but it could add up to something over a lot of years and many observers.

Has it ever occurred to you that snakes may or may not coil up in one certain spiral at different times or in different seasons? You may not feel like keeping them as pets to make such a note, but the next time you go to a zoo, or—very rarely—see one coiled in the wild, is it clockwise or anti-clockwise? And if so, why? Ask that friend of yours who is going to Europe to try and note this in any zoo he sees.

And how do snakes get along so efficiently without limbs? The common acceptance is that they have their ribs attached to those long ventral scales under the body. These, in their muscular effort, raise the edge of the scales and grip the surface of the ground, and so give the snake good and swift traction. Maybe, but a legless lizard (Pygopus, Delma, Lialis) has not these broad transverse scales, and he gets along just as readily as any snake. As for speed—but I must get off this soapbox or you will probably ask me to resign from the "Nats" and join the nuts.

The whole point of this pointless tirade is that so much can be done by just sitting and watching in these days when the Museums are so full of dead specimens that the collector is becoming much less appreciated than the observer. The modern trend in museum display is to eliminate those glass coffins crammed with as many specimens of birds as possible, and put in their place a more dramatic and educational representative specimen of the family placed on a diagrammatic and pictorial background. Behind the scenes the "chairs" of the staff are studying the living creatures in captivity in an effort to find the reasons for patterns of behaviour observed by you and other amateur field workers in the open. And this brings us, I think to the real worth of the individualist club member and amateur student as an invaluable assistant to the worker in the laboratory. The demands of systematic work will largely prevent the professional man from spending the necessary long periods in the field in which to make the notes that can be taken back to his study for application to the behaviour of captive animals.

"Life history unknown" is still the final phrase in the bulk of specific descriptions of animal life, especially in the fields of Entomology, Arachnology and Herpetology. To reduce this gap go out and do your share of watching and recording—AND OFFER YOUR RECORDS AND NOTES TO SOME PERMANENT SOURCE OF REFERENCE. If some factor prevents your going into the field in search of facts, bring the small lives—tadpoles, frogs, beetles, ants, lizards into your yards and watch them there—alive and kicking.

Again, in conclusion, it is very important that you make written notes of your observations on the time those little lizard eggs took to hatch and in what situations. Did all those tadpoles which you collected from a small pool mature into the same species of frog? And if they did so, were they all of a similar colour pattern? Those Blue Wrens which come to your garden—do they come in from the same direction every day, and at the same time? Those hundreds of Funnel-web spiders which are reported to be rampant every time some one is bitten by some sort of insect. Are they exclusively the species *Atrax robusta* around the Sydney area? Students are currently engaged in some study of this item, as there are suspicions that there is more than one species of the genus here.

There are countless subjects that are worth study around you everywhere. You need no more expensive equipment than some spare time and an atrocious sticky-beakitude to discover some facts of real value at the best; or just enjoy living with other creatures, at the worst.

And now I must really get down to the problem of studying the most absorbing problem of the moment—water rates based on Valuer General hysteria. I shall be absent from several meetings after the publication of this—if accepted by our editors. Self preservation is still one of the two fundamentals in life!

BURIAL GROUNDS OF THE MILMERIDIEN

By ISOBEL BOWDEN

In my old Botanical Dictionary edited by John Lindley and Thomas Moore is a steel engraving after Thomas Mitchell depicting "an Acacia Scrub" in New Holland.

This delineation of our wattle was different from anything I had ever seen; it appeared to represent a gracefully laid out garden with trees on both sides and on the left two aboriginal figures retreating out of the picture.

It was some time later before I turned to the front of the Dictionary and found the description of the plate, it read thus:— "Our illustration introduces us to a grove of Acacias in Eastern Australia, the burying ground of the Milmeridien. "On reaching the spot" says Thomas Mitchell "the natives became silent and held down their heads. Nor did their curiosity restrain them from passing on, although I unfolded my sketch book which they had not seen before, and remained there for half an hour for a purpose of which they could have no idea.

The burying ground was a fairy-like spot in the midst of a "scrub" of drooping Acacias. It was extensive and laid out in walks, which were narrow and smooth, as if intended only for "sprites" and they meandered in gracefully curved lines among the heaps of reddish earth which contrasted finely with the Acacias and dark Casuarinas around. Others girt with moss shot far into the recesses of the bush where slight traces of still more ancient graves proved the antiquity of these simple but touching records of humanity. With all our art we could do no more for the dead than these poor savages had done."

EDITOR'S NOTE:—

This extract was taken from The Treasury of Botany. A popular dictionary of the Vegetable Kingdom with which is incorporated a Glossary of Botanical Terms. Edited by John Lindley M.D., F.R.S., F.L.S., and Thomas Moore F.L.S., assisted by numerous contributors. Published by Longmans, Green and Co., London, 1866.

Miss Bowden treasures her copy for it was once the property of Charles Moore, Director of the Botanic Gardens, Sydney, from 1848 till 1896.

AN ENTOMOLOGICAL EL DORADO

By C. V. NATHAN

Lucky is the entomologist who owns a woodheap and a strip of native forest in his back yard! Such conditions provide a wealth of insects and other creatures for the Nature student.

It is my good fortune to own such an El Dorado and one morning I began to move some old cases of firewood that had been untouched for ten months. They had been stacked near the huge stem of a dead scribbly gum, covered from the weather with fence palings and protected by sheets of corrugated iron from the damp forest floor.

Imagine my initial dismay on sighting the clayey run ways of a colony of termites. They had cemented about eight palings together. It was with difficulty I turned the top one over for the sun had baked it into hard cement. The termites had some boarders too including a tiny white native silverfish (Atelura) and a little Rove beetle.

As each paling was lifted other finds came to light. There were some unusually shaped bugs, pinkish in colour, armed with cruel, curved beaks. A queer-shaped spider, with a V-shaped rear, sidled out at one stage and refused to quit its paling. This was Sidymella longipes, for which as yet there is no popular name. Lower down came small black crab-spiders, larger grey spiders, and still larger Huntsmen spiders. Some striking little scarlet beetles, rather bottle-shaped and a quarter inch long, were also there, and were identified later as Lemodes coccinea.

The removal of the firewood from the cases yielded fresh hauls. There were two types of large brown native cockroaches, one with long handsome wings, the other wingless, also more Huntsmen and Hemicloea spiders—both large flat types.

Greenhead ants were doing excellent mopping up operations amongst the termites, and as each box was tossed aside a yellow-breasted robin polished off remnants.

Clinging beneath the boxes in lush black soil were solidly built, wingless, black cockroaches. These natives (Panesthia australis), have most powerful claws for digging and clinging. Here was a rich area, yielding large, green, 5 inch centipedes, short brown ones and a thin ribbon type with at least 120 pairs of legs. (I lost count after this total). What looked like a baby white centipede half a centimetre long, turned out to be a Symphylans. Mr. McAlpine of the Sydney Museum told me that these creatures form a link between centipedes and insects, and occupy a niche of their own in the animal world but little is known of them. Another minute white creature closely resembling the Symphylans in colour and shape but with six legs—a true insect—was Campodea. It had a round head and busy little antennae. Some even smaller white insects resembling infant termites were springtails. In his Garden Notes Waratah refers to them as soil lice, but they do good work promoting humus formation. In the damp top soil many little crustaceans leapt about like fleas; these were the native sandhoppers, Talitrus, which go as red as prawns when cooked by the sun. Two fair-sized black beetles (Tenebrionids) had a decided chemical odour and were probably of predatory habit. Of the three types of Isopod uncovered, the most interesting was Armadillidium vulgare—the Armadillo, which rolls into a compact ball when threatened by its enemies.

Two specimens of the Great Grey Slug were wintering under one box, whilst in the ground below were three minute shells, each about 4 mm. high. They were endemic to N.S.W. according to Dr. McMichael of the Museum, and were probably young Opeas andelio Iredale of the Subulinidae family. They reminded me of miniature Tritons.

Almost as exciting as this find was the discovery of (to me) a new kind of spider, creeping crab-like beneath a dry box. It was grey and had a fat abdomen adorned with two tubercles on the back towards the rear. The legs were laterigrade, i.e. the front two pairs were longer than the two hind pairs. Later, Mr. McAlpine identified this strange half-inch spider as a member of the genus Sidymella, but he coud find no specific title, thus proving how little was really known about it. It was a crab spider of the family Thomisidae.

These and other interesting specimens unearthed during operations have made me determined to renew this search annually Who knows what may turn up!

LAND BIRDS OBSERVED FROM MY YARD IN NORTH BRIGHTON, N.S.W.

By ADELAIDE CROUCHER

The commonest indigenous bird is the little silver-eye (Zosterops lateralis) who regularly feeds at the tray hanging from the clothes line. The dainty blue wren (Malurus cyaneus) nests hereabout with his plain little wife and gladdens the dullest day with his sweet call.

Willie Wagtail (Rhipidura Leucophrys) sleeps in a gum tree and is startled into flight by the switching on of the yard light. The peewee (Grallina Cyanoleuca) is a regular visitor, foraging for titbits and keeping a wary eye on the cat.

A couple of years ago a sparrow appeared with a baby three times its size and fed it until it could take care of itself. It is one of the bronze cuckoos and still spends the summer in my trees. Apparently it is a solitary bird as I have only seen one.

The brown song lark (Cinclorhamphus cruralis) nests in nearby market gardens and is highly prized by the Chinese there as it reminds them of home. They have told me that they build tall cages in their homes to allow the bird to rise and sing. The nankeen kestrel (Falco cenchroides), too haunts the gardens catching the field mice.

The black-faced cuckoo-shrike (Coracina novae-hollandiae) appears in the winter and this is rather unusual as they prefer the summer but they appear to spend the night in the mangrove along our creek. A pair of kookaburras (Dacelo gigas) appear from time to time in the district and one can follow their progress by their cheery laugh. A few months ago a boobook owl Ninox (boobook) came to live in the garden but neighbours caught it and released it in the bush as they thought it was frightening their cage birds.

One of the most surprising sights in this district was a flight of 22 galahs Kakatoe (roseicapilla) joyously winging their way who knows where.

Introduced birds too are numerous. These include the Indian Turtle dove (Streptopelia suratensis) the Bulbul (Otocompsa emeria), house sparrow (Passer domesticus) starling (Sturnus vulgaris) and myna (Acridotheres tristis).

ITEMS OF INTEREST

Arranged outings were well attended and enjoyed. Each one provided some special interest. At Warrimoo we viewed a wonderful stand of Boronia floribunda; at The Sphinx we found a pure white Sun orchid (Thelymitra), a rare sight; at Normanhurst many saw for the first time the "postage stamp" web of the Stick spider (Dinopis bicornis). This spider keeps its adhesive web ready to throw over its victim. John Crompton in his "Life of the Spider" calls them "the Retiarii of the spider amphitheatre," and says "when some game, usually a moth, approaches they pick up their nets and get them ready. At the right moment the net is flung and the moth comes plunging down and is quickly put to death."

Many interesting exhibits were shown during the year, mainly Botanical and Geological, but a few unusual ones were:—

A whale's ear bone shown by Mrs. Lobban.

Mr. Nathan's carrion fungi (Lysurus Mokusin) identified by Professor White of Sydney University as one of the puff balls belonging to the order Phallates. A harmless fungus living on organic matter in the soil, it is a native of China. Apparently the spores were brought in on packing material from China and subsequently dumped in Vaucluse. The spores are carried by flies attracted by the carrion-like odour.

Mrs. Croucher's fossils from an underground limestone cave at Kandos of a kangaroo-like animal, extinct for the last ten thousand years.

A Giant Crab claw, the largest crab in existence, shown by Mr. Nathan.

A commercial ivory nut and cross section shown by Miss Brewin.

Many beautiful transparencies were shown.

Mr. Holmes would like to know: Do snakes coil clockwise or anti-clockwise always? Would members please observe and tell him! Your Editor missed a wonderful chance at Pymble some years ago—when she found a large black snake coiled up under the bed of a small five year old visitor's bed. She shut the door hurriedly and offered the postman the choice of a heavy walking stick or a light cane with which to kill it. He choose the heavier one and had the first kill of his life. She had sat beside that bed for a long time the evening before coaxing the small maiden to sleep, and wondered had that snake listened to her stories. The child had been restless, wanted her dolly wheeled out "to be safe" and she thought later its movements had caused the child's restlessness.

Miss Dobbin gave us the chuckle of the year when she told us of her meeting on Chatswood station with two men who had evidently recently visited the local hotel. On the back of one man's hand was a large spider. They wanted to know was it a funnel web spider and she assured them it was and that the man would get a dangerous bite if it reared up and then struck down at his hand. "Aw, lady!" was the reply, "It's already done that three times!" She told his mate to take him to a doctor or chemist straightaway, but they left weaving their way to the pub. We don't know the end of her story, but didn't see "Funnel Web Tragedy" in the next morning's S.M.H.

Through the courtesy of the Agricultural Department, Miss English has secured for the Library copies of Mr. Zech's perfect illustrations of eighteen Agricultural pests. We congratulate Mr. Zech and feel proud he is one of our members.

Members will be pleased to know that Miss I. Bowden was appointed a Trustee of the Blue Mountains National Park Trust last year.

And lastly we send the grateful thanks of the Society to our energetic and capable Secretary, Mrs. Croucher, and to our indefatigable Treasurer Mrs. Watson.

The following extract from the Jubilee Publication of the Linnean Society of New South Wales published in 1925, being Historical Notes of Its First Fifty Years should be of interest to our members:—

"In the earlier years, when the population of Sydney had not spread so widely as now and when the interests of individual naturalists were not specialised as they are today, excursions were arranged for members, and the collections made on these excursions were often exhibited at the meetings and in many cases they now form interesting records of the occurrence of animals or plants in localities near Sydney from which they have long since disappeared. Of recent years this function has been filled to some extent by the Naturalists' Society of New South Wales and its predecessor, the Field Naturalists' Club."

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